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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,424	03/25/2004	Ryoichi Kaku	119245	6949

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EXAMINER	
PARK, EDWARD	
ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/808,424	KAKU ET AL.	
	Examiner	Art Unit	
	EDWARD PARK	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *01 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,8-12,17,18 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3,9,12,18,22 and 24* is/are allowed.

6)☒ Claim(s) *1,8,10,17,21,23 and 25* is/are rejected.

7)☒ Claim(s) *2 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/1/10 has been entered.

Response to Arguments

2. Applicant's arguments filed on 4/1/10, in regards to claim 1, have been fully considered but they are not persuasive. Applicant argues that the prior art does not teach wherein in a central part .... about the Y-axis while being directed toward the central part object (see pg. 13, second – last paragraph). This argument is not considered persuasive since the limitation is disclosed within Mukoyama, fig. 15, 16, col. 14, lines 35-col. 15, lines 43, where display element P can be rotated in any manner about the three rotational axes X, Y, and Z that intersect at the center point (center of gravity) thereof. More specifically, in the case of deploying a display element P that is defined in a body coordinate system in a world coordinate system, it is positioned by rotating it a determined rotational angle about each of the axes X, Y, and Z. Thus each display element P is configured so that it is possible to orient the normal direction thereof in

any direction, and the display elements P can always be directionally controlled according to the position of the point of view; controlling the direction of each display element P so that the plurality of display elements P configuring that object faces in the direction of the representative point vector V1. In other words, the directions in which the planes of each of the plurality of display elements face are altered dynamically and uniformly in correspondence with the direction V0 of the point of view VP, and controlled so that they always face in the same direction. Examiner notes that the Mukoyama reference discloses that the object can be rotated on any axis including the Y-axis according to the viewpoint VP as shown within fig. 16 and the corresponding portion of the specification. Applicant argues that the elements of Mukayama are flat objects instead of three-dimensional projecting portion extending at least in a direction perpendicular to the display surface (see pg. 13, last paragraph). This argument is not considered persuasive since Mukoyama does not disclose this limitation, rather it is Takahashi as seen within this action as a 103 rejection. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding claim 10, applicant argues that the claim is allowable due to the same reasons as claim 1 (see pg. 14, first paragraph). This argument is not considered persuasive since claim 1 stands rejected and the arguments and rejections can be seen within this action.

Regarding claims 8, 17, applicant argues that the claims are allowable due to the dependency from the respective independent claims (see pg. 14, second paragraph). This

argument is not considered persuasive since the independent claims stand rejected and the arguments and rejections can be seen within this action.

Applicant's arguments, see pg. 14, first paragraph – second paragraph, filed 4/1/10, with respect to claims 2, 3, 9, 11, 12, 18 have been fully considered and are persuasive. The rejections of claims 2, 3, 9, 11, 12, 18 have been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 8, 10, 17, 21, 23, 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukoyama et al (US 6,831,659 B1) with Bothcy (C Magazine; "Speed-up Techniques and thinking Routine for 3D games found Source Code of a 3D game "Doom""), and further in view of Takahashi et al (US 2003/0207704 A1).

Regarding **claim 1**, Mukoyama teaches an image generation method for generating an image, the method comprising:

storing object data in an object data storage section (Mukoyama: figure 1, numeral 102);

disposing a plurality of objects in an object space, based on the object data stored in the object data storage section (Mukoyama: figure 14);

controlling a virtual camera (Mukoyama: col. 8, lines 5-27);

disposing in the object space, a model object including a plurality of part objects each of which has a projection shape, and a display surface on which an image is drawn (Mukoyama: figure 15, figure 16; col. 14, lines 35-65; fig. 16, col. 14, 66-67, col. 15, lines 1-14; each display element P is established on the tree object that has a vector v1 that is projected towards the point of view VP, wherein display element P has a image such as a leaf cluster, each display element P can be rotated in any manner about the three rotational axes X, Y, Z that intersect at the center point (center of gravity) thereof), wherein a central part object include in the model object stands along a Y-axis, the Y-axis being an axis along a vertical direction, and the rest of the part objects are positioned apart from a central axis of the central part object (see fig. 15, 16); and rotating each of the part objects bout the Y-axis (see fig. 15, 16), with a processor, based on rotational information of the virtual camera so that the display surface of each of the part objects is directed toward the virtual camera when the virtual camera rotates about the Y-axis while being directed toward the central part object (Mukoyama: figure 15, 16). Mukoyama does not teach generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing and a three dimensional projection portion extending at least in a direction perpendicular to a display surface.

Bothcy, in the same field of endeavor, teaches generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing ("Billboarding": Bothcy: pgs. 3-4).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama reference to utilize hidden surface removal processing as suggested by Bothcy, to "achieve high-speed processing" (Bothcy: pgs. 3-4).

Takahashi, in the same field of endeavor, teaches a three dimensional projection portion extending at least in a direction perpendicular to a display surface (see paragraph [0062]; geometry unit 214 carries out calculations on coordinates of a three-dimensional model (for example, a subject constructed of a plurality of polygons) of a subject or a graphics placed in a virtual three-dimensional game space. For example, the geometry unit 214 performs rotation, scaling, and change in shape of the three-dimensional model, or carries out coordinate transformation from a world coordinate system into a viewpoint coordinate system or a screen coordinate system. The rendering unit 215 writes, based on a predetermined texture, color data (RGB data) of each pixel of the three-dimensional model reflected onto a screen coordinates into the color buffer 216 to generate a game image).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama with Bothcy to utilize three dimensional projection portion as suggested by Takahashi, to allow rendering of three-dimensional image/models onto a display in order to enhance the user's experience by creating a novel/realistic sensation during operation (see paragraphs [0062], [0010]).

Regarding **claim 8**, Mukoyama teaches wherein part objects include a first part object and a second part object, the first and second part objects being adjacent each other (Mukoyama: figure 14), the method further comprising: disposing the first and second part objects so as to overlap each other in a view image viewed from the virtual camera (Mukoyama: figure 14) or

intersect each other even when the virtual camera rotates 360 degrees about a given coordinate axis.

Regarding **claim 10**, Mukoyama teaches at least one of an optical disc, magnetic optical disc, magnetic disc, hard disc, magnetic tape and memory embedded with a program for generating an image, the program causing a computer to implement processing (Mukoyama: col. 2, lines 47-50, col. 5, lines 14-27; provide a recording medium capable of providing a program wherewith the image processing of the present invention is possible; such media include hard disks, magnetic tape, optical magnetic disks, CDs, etc.) of the method of claim 1 (the claim is rejected under the same combinations, teachings, and motivation as claim 1).

Regarding **claim 17**, Mukoyama teaches wherein part objects include a first part object and a second part object, the first and second part objects being adjacent each other (Mukoyama: figure 14), the program further causing a computer to implement processing of: disposing the first and second part objects so as to overlap each other in a view image viewed from the virtual camera (Mukoyama: figure 14) or intersect each other even when the virtual camera rotates 360 degrees about a given coordinate axis.

Regarding **claim 21**, Mukoyama teaches an image generation method for generating an image, the method comprising:

storing object data in an object data storage section (Mukoyama: figure 1, numeral 102);

disposing a plurality of objects in an object space, based on the object data stored in the object data storage section (Mukoyama: figure 14);

controlling a virtual camera (Mukoyama: col. 8, lines 5-27);

disposing in the object space, a model object including a plurality of part objects each of which has a projection shape, and a display surface on which an image is drawn (Mukoyama: figure 15, figure 16; col. 14, lines 35-65; fig. 16, col. 14, 66-67, col. 15, lines 1-14; each display element P is established on the tree object that has a vector v1 that is projected towards the point of view VP, wherein display element P has a image such as a leaf cluster, each display element P can be rotated in any manner about the three rotational axes X, Y, Z that intersect at the center point (center of gravity) thereof), wherein a central part object include in the model object stands along a Y-axis, the Y-axis being an axis along a vertical direction, and the rest of the part objects are positioned apart from a central axis of the central part object (see fig. 15, 16); and rotating, with a processor, each of the part objects about an X-axis (see fig. 15, 16), which is perpendicular to the Y-axis, based on rotational information of the virtual camera so that the display surface of each of the part objects is directed toward the virtual camera when the virtual camera rotates about the X-axis while being directed toward the column-shaped part object (Mukoyama: figure 15, 16). Mukoyama does not teach generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing and a three dimensional projection portion extending at least in a direction perpendicular to a display surface.

Bothcy, in the same field of endeavor, teaches generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing ("Billboarding": Bothcy: pgs. 3-4).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama reference to utilize hidden surface removal processing as suggested by Bothcy, to "achieve high-speed processing" (Bothcy: pgs. 3-4).

Takahashi, in the same field of endeavor, teaches a three dimensional projection portion extending at least in a direction perpendicular to a display surface (see paragraph [0062]; geometry unit 214 carries out calculations on coordinates of a three-dimensional model (for example, a subject constructed of a plurality of polygons) of a subject or a graphics placed in a virtual three-dimensional game space. For example, the geometry unit 214 performs rotation, scaling, and change in shape of the three-dimensional model, or carries out coordinate transformation from a world coordinate system into a viewpoint coordinate system or a screen coordinate system. The rendering unit 215 writes, based on a predetermined texture, color data (RGB data) of each pixel of the three-dimensional model reflected onto a screen coordinates into the color buffer 216 to generate a game image).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama with Bothcy to utilize three dimensional projection portion as suggested by Takahashi, to allow rendering of three-dimensional image/models onto a display in order to enhance the user's experience by creating a novel/realistic sensation during operation (see paragraphs [0062], [0010]).

Regarding **claim 23**, Mukoyama teaches at least one of an optical disc, magnetic optical disc, magnetic disc, hard disc, magnetic tape and memory embedded with a program (Mukoyama: col. 2, lines 47-50, col. 5, lines 14-27; provide a recording medium capable of providing a program wherewith the image processing of the present invention is possible; such

media include hard disks, magnetic tape, optical magnetic disks, CDs, etc.) for generating an image, the program causing a computer to implement processing of:

storing object data in an object data storage section (Mukoyama: figure 1, numeral 102);

disposing a plurality of objects in an object space, based on the object data stored in the object data storage section (Mukoyama: figure 14);

controlling a virtual camera (Mukoyama: col. 8, lines 5-27);

disposing in the object space, a model object including a plurality of part objects each of which has a projection shape, and a display surface on which an image is drawn (Mukoyama: figure 15, figure 16; col. 14, lines 35-65; fig. 16, col. 14, 66-67, col. 15, lines 1-14; each display element P is established on the tree object that has a vector v1 that is projected towards the point of view VP, wherein display element P has a image such as a leaf cluster, each display element P can be rotated in any manner about the three rotational axes X, Y, Z that intersect at the center point (center of gravity) thereof), wherein a central part object include in the model object stands along a Y-axis, the Y-axis being an axis along a vertical direction, and the rest of the part objects are positioned apart from a central axis of the central part object (see fig. 15, 16); and rotating, with a processor, each of the part objects about an X-axis (see fig. 15, 16), which is perpendicular to the Y-axis, based on rotational information of the virtual camera so that the display surface of each of the part objects is directed toward the virtual camera when the virtual camera rotates about the X-axis while being directed toward the central part object (Mukoyama: figure 15, 16). Mukoyama does not teach generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing and a three dimensional projection portion extending at least in a direction perpendicular to a display surface.

Bothcy, in the same field of endeavor, teaches generating an image viewed form the virtual camera in the object space while performing hidden surface removal processing ("Billboarding": Bothcy: pgs. 3-4).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama reference to utilize hidden surface removal processing as suggested by Bothcy, to "achieve high-speed processing" (Bothcy: pgs. 3-4).

Takahashi, in the same field of endeavor, teaches a three dimensional projection portion extending at least in a direction perpendicular to a display surface (see paragraph [0062]; geometry unit 214 carries out calculations on coordinates of a three-dimensional model (for example, a subject constructed of a plurality of polygons) of a subject or a graphics placed in a virtual three-dimensional game space. For example, the geometry unit 214 performs rotation, scaling, and change in shape of the three-dimensional model, or carries out coordinate transformation from a world coordinate system into a viewpoint coordinate system or a screen coordinate system. The rendering unit 215 writes, based on a predetermined texture, color data (RGB data) of each pixel of the three-dimensional model reflected onto a screen coordinates into the color buffer 216 to generate a game image).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Mukoyama with Bothcy to utilize three dimensional projection portion as suggested by Takahashi, to allow rendering of three-dimensional image/models onto a display in order to enhance the user's experience by creating a novel/realistic sensation during operation (see paragraphs [0062], [0010]).

Regarding **claim 25**, Mukoyama teaches central part object is columnar shaped (see fig. 15, 16).

Allowable Subject Matter

5. Claims 3, 9, 12, 18, 22, 24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 3, 9, 12, 18, the most relevant prior art of record, Mukoyama, Bothcy, with Takahashi combination, teaches storing object data in an object data storage section; disposing a plurality of objects in an object space, based on the object data stored in the object data storage section; controlling a virtual camera; generating an image viewed from the virtual camera in the object space while performing hidden surface removal processing; disposing a model object having a plurality of part objects in the object space, the part objects each having a display surface and being three-dimensional objects extending at least in a direction perpendicular to the display surface, wherein a central part object included in the model object stands along a Y-axis, the Y-axis being an axis along a vertical direction, and the rest of the part objects are positioned apart from a central axis of the column-shaped part object; rotating each of the part objects, objects about the Y-axis, with a processor, based on rotational information of the virtual camera so that a display surface of each of the part objects on which an image is drawn is directed toward the virtual camera; camera when the virtual camera rotates about the Y-axis while being directed toward the central part object; and

mapping on each of the part objects for forming a virtual projection shape on the display surface of the part objects by pixel unit.

Applicant's claimed invention distinguishes over the Mukoyama, Bothcy, with Takahashi combination by generating the plurality of objects as three-dimensional objects including Z-texture values; storing a Z texture in which an offset value of a Z-value is set on each texel in a texture storage section; mapping the Z texture stored in the texture storage section on each of the objects; and mapping on each of the part objects the Z texture.

Regarding claims 22, 24, the most relevant prior art of record, Mukoyama, Bothcy, with Takahashi combination, teaches storing object data in an object data storage section; disposing a plurality of objects in an object space, based on the object data stored in the object data storage section; controlling a virtual camera; generating an image viewed from the virtual camera in the object space while performing hidden surface removal processing; disposing a model object having a plurality of part objects in the object space, the part objects each having a display surface and being three-dimensional objects extending at least in a direction perpendicular to the display surface, wherein a central part object included in the model object stands along a Y-axis, the Y-axis being an axis along a vertical direction, and the rest of the part objects are positioned apart from a central axis of the column-shaped part object; rotating, with a processor, each of the part objects about an X-axis which is perpendicular to the Y-axis, based on rotational information of the virtual camera so that a display surface of each of the part objects on which an image is drawn is directed toward the virtual camera when the virtual camera rotates about the X-axis, which is perpendicular to the Y-axis while being directed toward the central part object; and

mapping on each of the part objects for forming a virtual projection shape on the display surface of the part objects by pixel unit.

Applicant's claimed invention distinguishes over the Mukoyama, Bothcy, with Takahashi combination by generating the plurality of objects as three-dimensional objects including Z-texture values; storing a Z texture in which an offset value of a Z-value is set on each texel in a texture storage section; mapping the Z texture stored in the texture storage section on each of the objects; and mapping on each of the part objects the Z texture.

6. Claims 2, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 2, none of the references of record alone or in combination suggest or fairly teach storing a Z texture in which an offset value of a Z-value is set on each texel in a texture storage section; mapping the Z texture stored in the texture storage section on each of the objects; and mapping on each of the part objects the Z texture for setting bump shapes on the display surface by pixel unit.

Regarding claim 11, none of the references of record alone or in combination suggest or fairly teach storing a Z texture in which an offset value of a Z-value is set on each texel in a texture storage section; mapping the Z texture stored in the texture storage section on each of the objects; and mapping on each of the part objects the Z texture for setting bump shapes on the display surface by pixel unit.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PARK whose telephone number is (571)270-1576. The examiner can normally be reached on M-F 10:30 - 20:00, (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Edward Park
Examiner
Art Unit 2624

/Edward Park/
Examiner, Art Unit 2624
/Brian Q Le/
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